



**MOHAMMAD SOHEL**  
**ASSOCIATE PROFESSOR**  
**NATURAL SCIENCES DEPARTMENT**

I have joined in the Natural Sciences Department in 2007 as an Assistant Professor. Like many of us at Hostos Community College, in addition to our significant teaching loads, service and student mentorship, we are expected to carry on our research and contribute significantly to our professional field through research and publication. My educational background and professional training is in the field of nanoscience and nanotechnology which is the study, manipulation and application of extremely small things of matter on an atomic, molecular level that are less than 100 nanometer in size. **Do you know-** *25,400,000 nanometers in one inch. A human hair is approximately 80,000- 100,000 nanometers wide. A strand of human DNA is only 2.5 nanometers in diameter* More specifically my research focuses on the fabrication and characterization of nanomaterials for application in optoelectronic devices such as sensors, LEDs, solar cells and batteries. My Sabbatical experiences in the fall of 2015 has given me an unique opportunity to continue and expand my professional journey in two directions - (i) expand my research horizon in the amazing process of discovery and (ii) to further explore my chemical education research in process oriented guided inquiry learning (POGIL) to further enhance my teaching instructions and student learning.

The nature of my research, like any others, are laborious and time demanding. Also,

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it requires the use of very delicate and powerful instrumentation and techniques. As an example, the use of special powerful microscope since it is not possible to see atoms or particle using light as in traditional microscope. To view the imaging of nano sized materials, it requires the use high resolution sophisticated microscope such as atomic force microscope or electron microscope which has magnification of about one million where as a traditional microscope is about 2500 times. With such a high demanding teaching loads along with availability and flexibility it was impossible to dedicate a significant amount of time to carryout carry out characterizations of the synthesized nanomaterials during academic years. In the summer of 2013 I was awarded competitive U.S Department of Energy's Faculty Fellowship at Argonne National Laboratory in Chicago where I was able to conduct my proposed research. Later in the summer of 2014 and 2015, I was awarded with two more faculty fellowships at Brookhaven National Laboratory (BNL) in New York to conduct my new proposed research. All these fellowships in the national laboratory gave me an opportunity to collaborate and network with a team of top-notch world-renowned scientists and use and access to state of the art technology and instrumentations. I was able to maneuver and image my nanomaterials using High Resolution Transmission Electron Microscope! In addition, I was able to expand the direction of my research and test new possibility of application. I was able to acquire significant amount of new data along with vast experience. When the fellowships ended in 2015, it became very obvious for me to compile the data, further characterize the samples as needed, present and publish the findings. More importantly, I wanted to take advantage of my well-established network of collaborators and access to BNL to continue further. But it became very difficult and challenging for me to dedicate a fair amount of time and commitment to continue my research during academic year. After discussing with Provost Mangino, our chairperson and colleagues, I have decided to apply for sabbatical for the fall semester of 2015 and it was approved. Finally I can dedicate my time to accomplish my research!

During the sabbatical, I was able to compile and perform in-depth analysis of the data, collaborate and publish two peer reviewed articles in scientific journals, and present in several national and international conferences including as invited and key note speakers.

Very often I serve as a reviewer. Most importantly, the findings opened up new directions and opportunities that resulted in applying and securing grants including CUNY Chancellors Research Fellowships.

In addition to my research in nanoscience and nanotechnology, I have significant interest in chemical education research. I have years of significant experience in developing and integrating Peer-Let Team Learning (PLTL) model that utilized the peers as peer leaders to guide who have successfully completed the course previously. Currently I am interested in Process Oriented Guided Inquiry Learning (POGIL) an active learning process that focuses on the process by which student develop new skills in information processing. During my sabbatical I was able to collaborate with Dr. Serafin of the Chemistry Department at St. Johns University to have a hands on experience in integrating POGIL as a recitation component in different chemistry classes. I am working to integrate and implement POGIL in my courses that I teach at Hostos.

My DOE Fellowships has paved the way to have a very positive and successful sabbatical experience as the time and all the available opportunities have aligned very well. Finally, I am grateful to my colleagues and office of academic affairs for the opportunity and support.

## About the Author

Mohammad Sohel began at Hostos in 2007. Currently, he is a Professor at the Natural Sciences Department. He holds a Ph.D. in Chemistry- Nanoscience and Nanotechnology. He teaches Chemistry and Science courses to our science and engineering students and conducts research on the synthesis and application of semiconductor nanomaterials for applications in optoelectronic devices such as solar cells, light emitting diodes, sensors and biological imaging. In addition to serving on numerous collegewide committees, he serves as a CUNY IRB review board member, PSC-CUNY grants review committee, and on advisory council of different scientific organizations.

**MAY 8** **TEACHING DAY**  
TIME: 11:00 AM-4:00 PM  
ROOM: A-ATRIUM

**MAY 29** **SPA DAY**  
TIME: 9:00 AM-5:00 PM  
ROOM: CAFETERIA

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The center for teaching and learning is delighted to announce the launching of our new redesigned website.

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**Mission:**  
In keeping with Hostos tradition, the Center for Teaching and Learning promotes excellence in teaching and learning with innovative pedagogies and state-of-the-art technologies by fostering interdisciplinary and cross-divisional collaborations.

**Goals and Objectives:**  
In order to fulfill its mission, the Center for Teaching and Learning strives to accomplish the following goals and objectives:

- Promote teaching innovation
- Provide faculty professional development activities
- Support Scholarship of Teaching and Learning (SoTL)
- Support curriculum development and revision
- Create and disseminate instructional resource materials, including a faculty handbook

CTL Search

CTL Publications

- CTL Newsletter Vol. 5 Fall 2017
- CTL Newsletter Vol. 4 Spring 2017
- CTL Newsletter Vol. 3 Fall 2016
- CTL Fall 2016 PD Calendar
- CTL Spring 2016 PD Calendar
- CTL Newsletter Vol. 2 Spring 2016
- CTL Newsletter Vol. 1 Fall 2015

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Upcoming Calendar Events

- Online Seminar: Dealing with Student Behaviors that Compromise Learning February 13 @ 2:00 pm - 4:00 pm
- Online Seminar - The Flipped Classroom: Strategies to Overcome Student Resistance and Increase Student Engagement February 22 @ 2:00 pm - 4:00 pm
- Online Seminar - An Integrated Approach to Student Exams March 2 @ 2:00 pm - 4:00 pm

HTI- Question authority(?): How do we

<http://commons.hostos.cuny.edu/ctl/>